FIG. 1

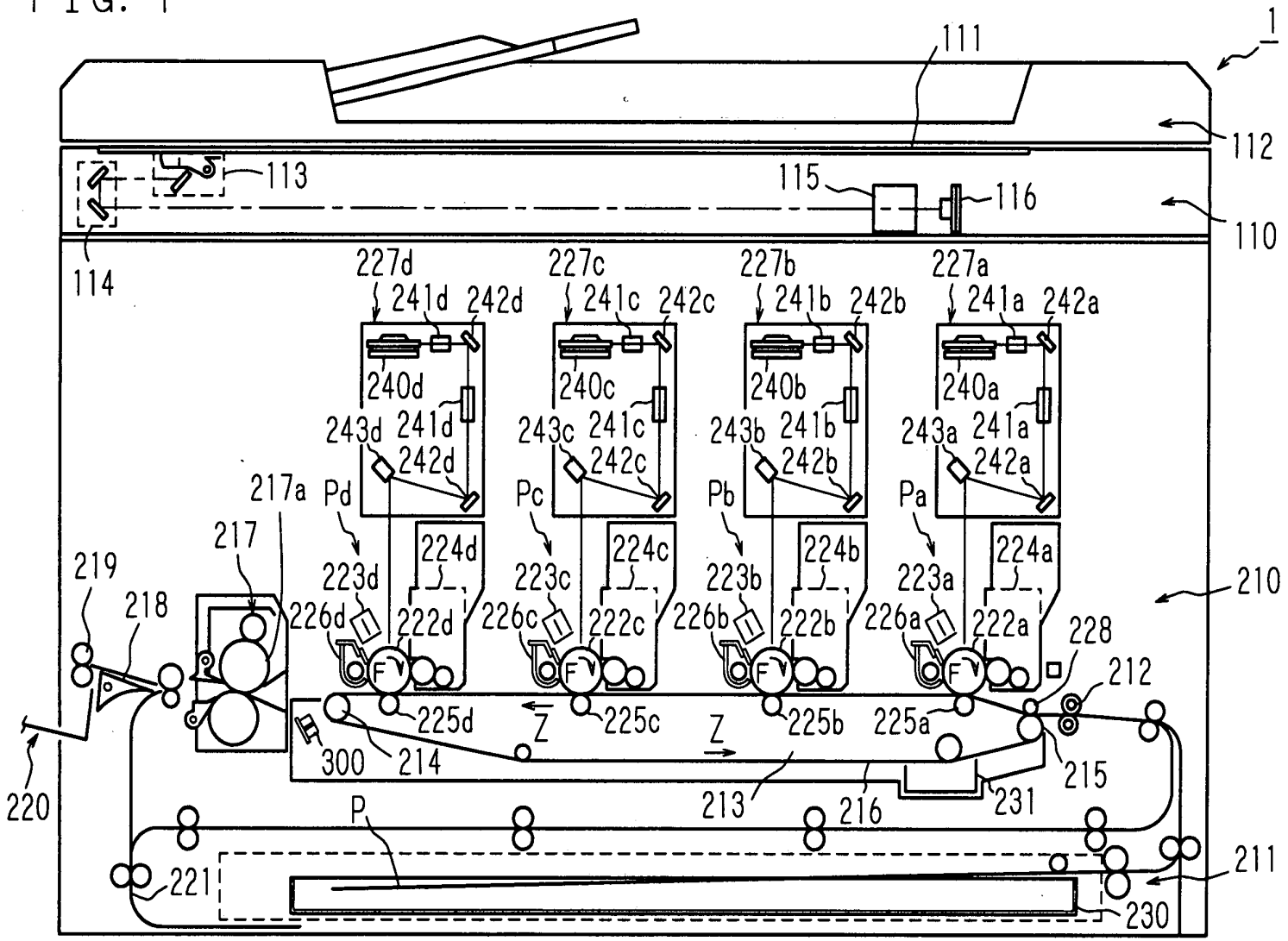

1
111
112
113
114
115
116
110
227d
241d
242d
240d
243d
227c
241c
242c
240c
243c
227b
241b
242b
240b
243b
227a
241a
242a
240a
243a
217a
Pd
Pc
Pb
Pa
217
219
218
224d
224c
224b
224a
223d
223c
223b
223a
226d
226c
226b
226a
222d
222c
222b
222a
210
228
212
225d
225c
225b
225a
Z
Z
300
214
215
220
213
216
231
P
221
211
230

FIG. 2

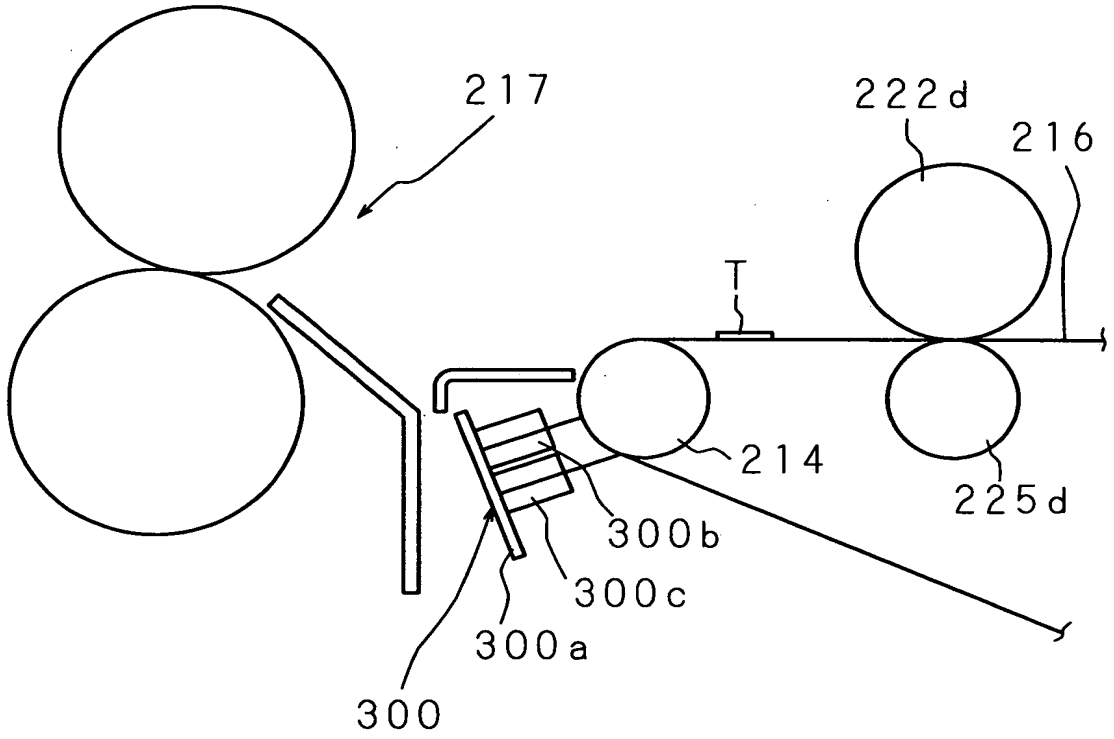


FIG. 3

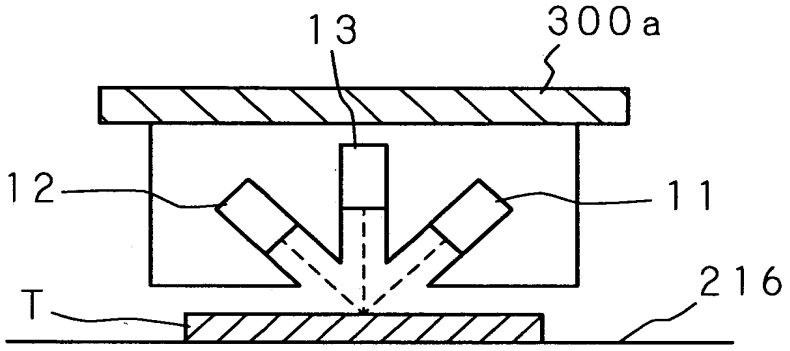


FIG. 4

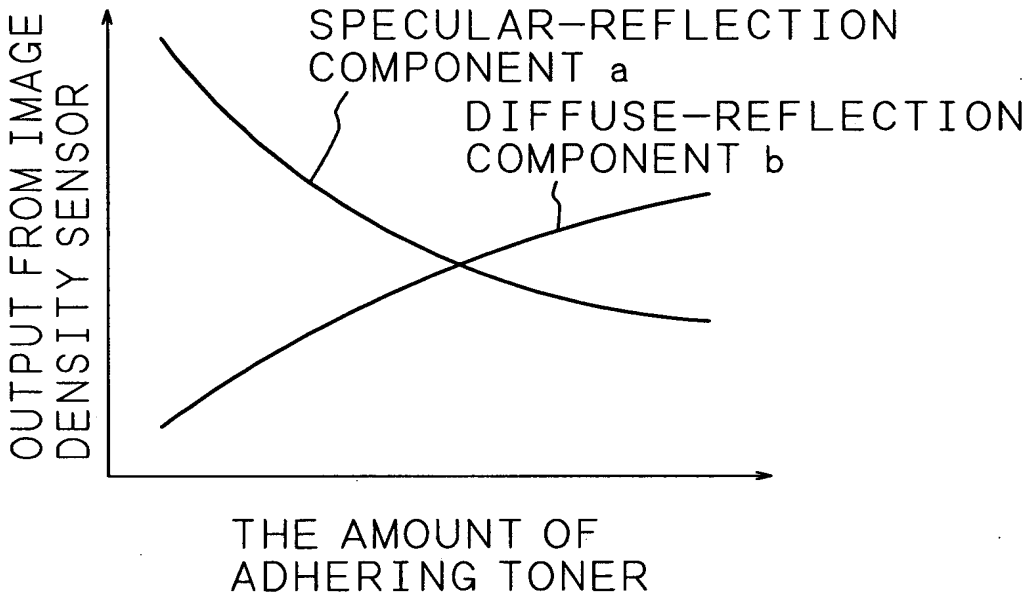

SPECULAR-REFLECTION
COMPONENT a
DIFFUSE-REFLECTION
COMPONENT b
OUTPUT FROM IMAGE
DENSITY SENSOR
THE AMOUNT OF
ADHERING TONER

FIG. 5

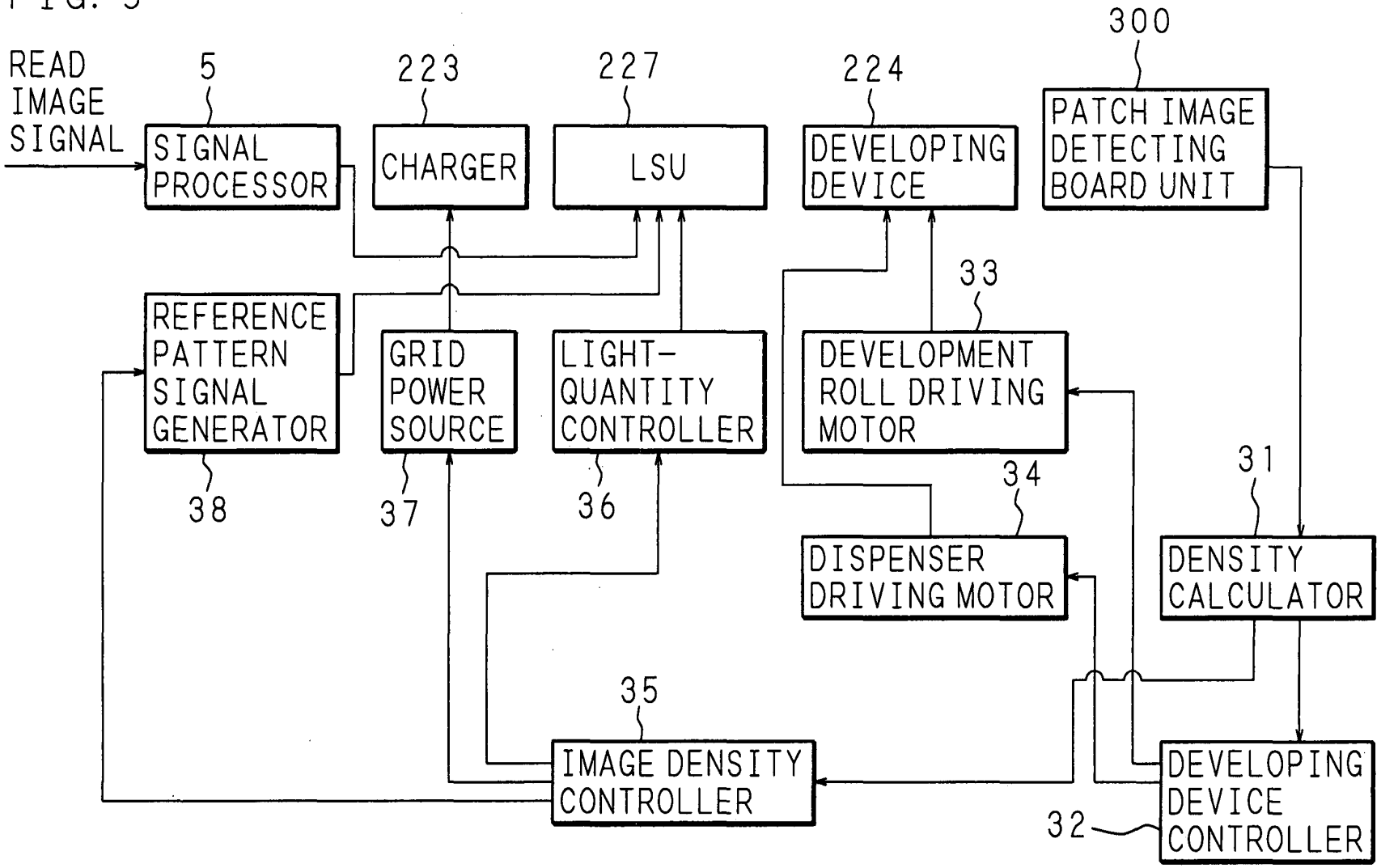

READ IMAGE SIGNAL
5
SIGNAL PROCESSOR
223
CHARGER
227
LSU
224
DEVELOPING DEVICE
300
PATCH IMAGE DETECTING BOARD UNIT
33
REFERENCE PATTERN SIGNAL GENERATOR
GRID POWER SOURCE
LIGHT-QUANTITY CONTROLLER
DEVELOPMENT ROLL DRIVING MOTOR
38
37
36
34
31
DISPENSER DRIVING MOTOR
DENSITY CALCULATOR
35
IMAGE DENSITY CONTROLLER
DEVELOPING DEVICE CONTROLLER
32

FIG. 6

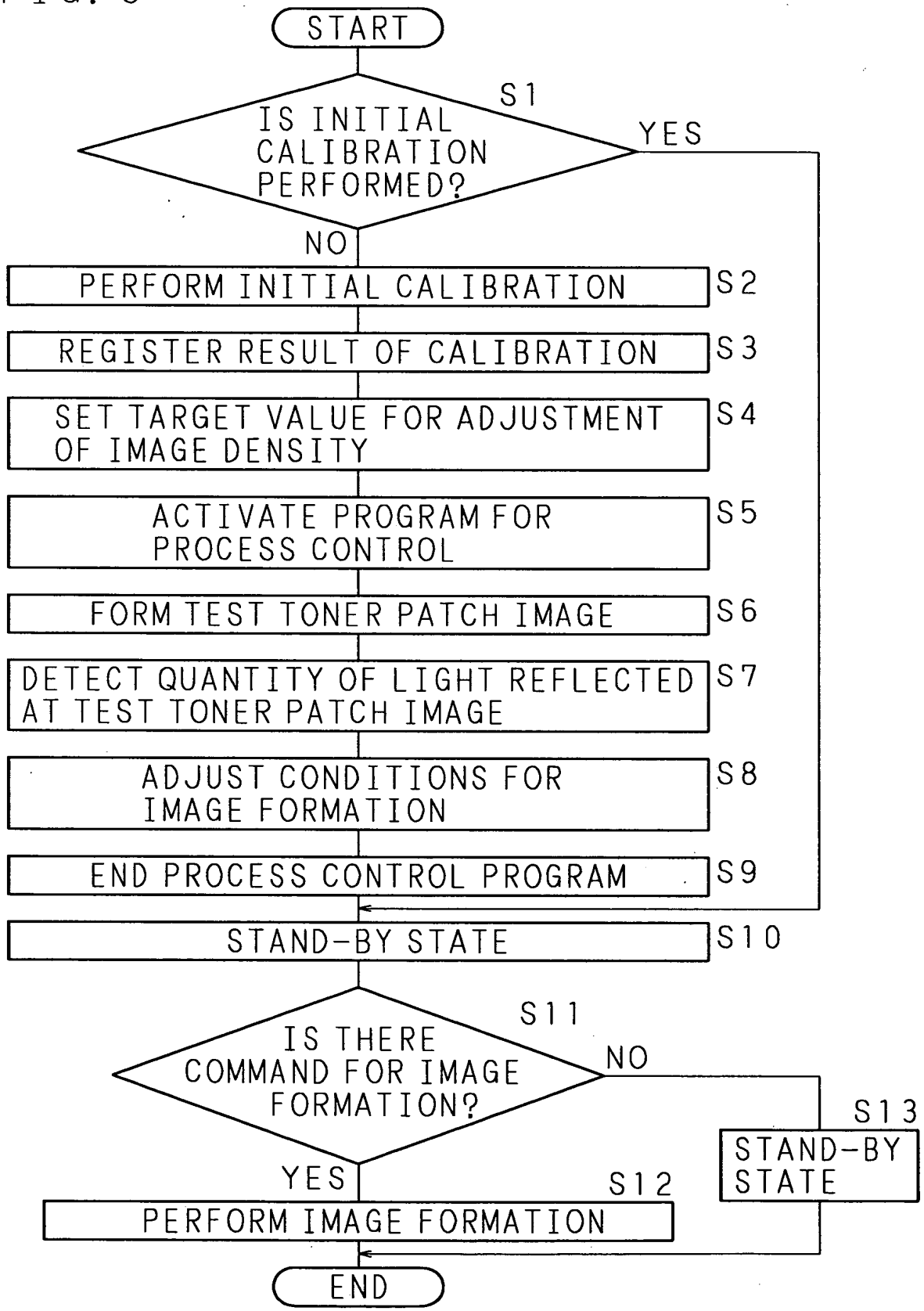

START
S1
IS INITIAL CALIBRATION PERFORMED?
YES
NO
PERFORM INITIAL CALIBRATION
S2
REGISTER RESULT OF CALIBRATION
S3
SET TARGET VALUE FOR ADJUSTMENT OF IMAGE DENSITY
S4
ACTIVATE PROGRAM FOR PROCESS CONTROL
S5
FORM TEST TONER PATCH IMAGE
S6
DETECT QUANTITY OF LIGHT REFLECTED AT TEST TONER PATCH IMAGE
S7
ADJUST CONDITIONS FOR IMAGE FORMATION
S8
END PROCESS CONTROL PROGRAM
S9
STAND-BY STATE
S10
S11
IS THERE COMMAND FOR IMAGE FORMATION?
NO
S13
STAND-BY STATE
YES
S12
PERFORM IMAGE FORMATION
END

FIG. 7

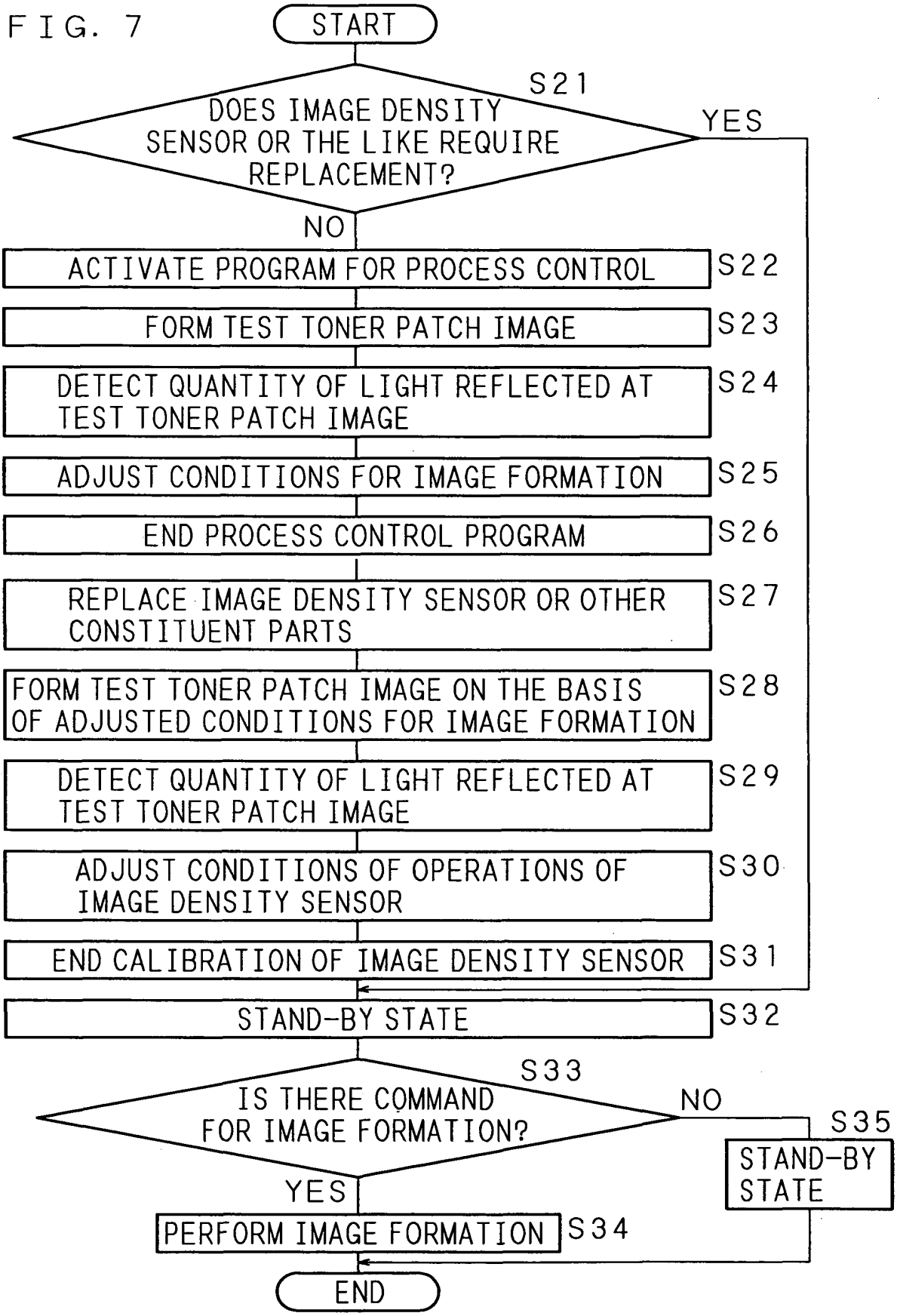

START
S21
DOES IMAGE DENSITY SENSOR OR THE LIKE REQUIRE REPLACEMENT?
YES
NO
ACTIVATE PROGRAM FOR PROCESS CONTROL
S22
FORM TEST TONER PATCH IMAGE
S23
DETECT QUANTITY OF LIGHT REFLECTED AT TEST TONER PATCH IMAGE
S24
ADJUST CONDITIONS FOR IMAGE FORMATION
S25
END PROCESS CONTROL PROGRAM
S26
REPLACE IMAGE DENSITY SENSOR OR OTHER CONSTITUENT PARTS
S27
FORM TEST TONER PATCH IMAGE ON THE BASIS OF ADJUSTED CONDITIONS FOR IMAGE FORMATION
S28
DETECT QUANTITY OF LIGHT REFLECTED AT TEST TONER PATCH IMAGE
S29
ADJUST CONDITIONS OF OPERATIONS OF IMAGE DENSITY SENSOR
S30
END CALIBRATION OF IMAGE DENSITY SENSOR
S31
STAND-BY STATE
S32
S33
IS THERE COMMAND FOR IMAGE FORMATION?
NO
S35
STAND-BY STATE
YES
PERFORM IMAGE FORMATION
S34
END

FIG. 8

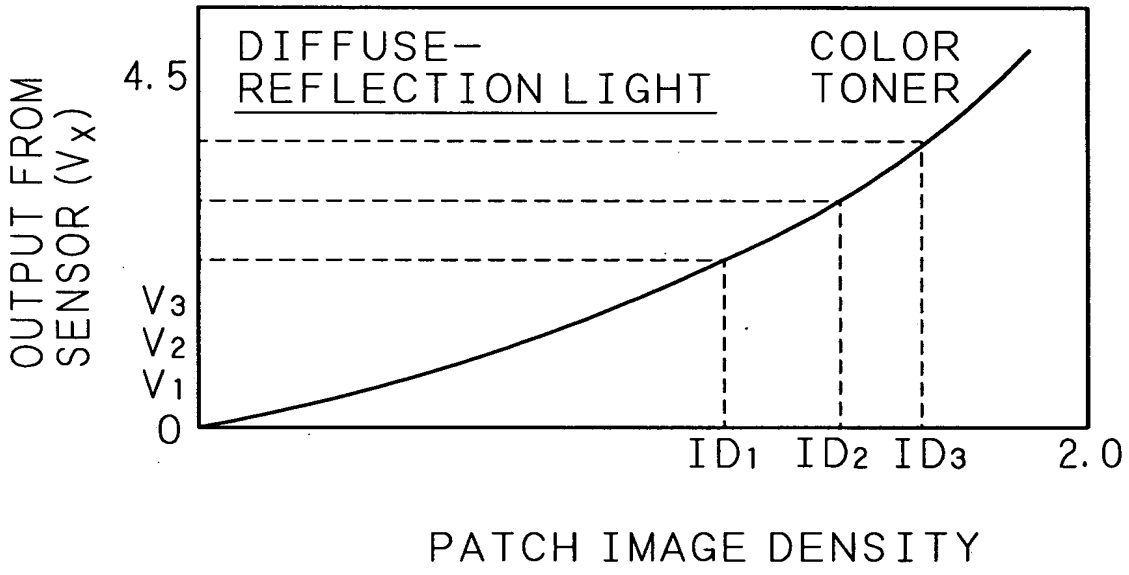
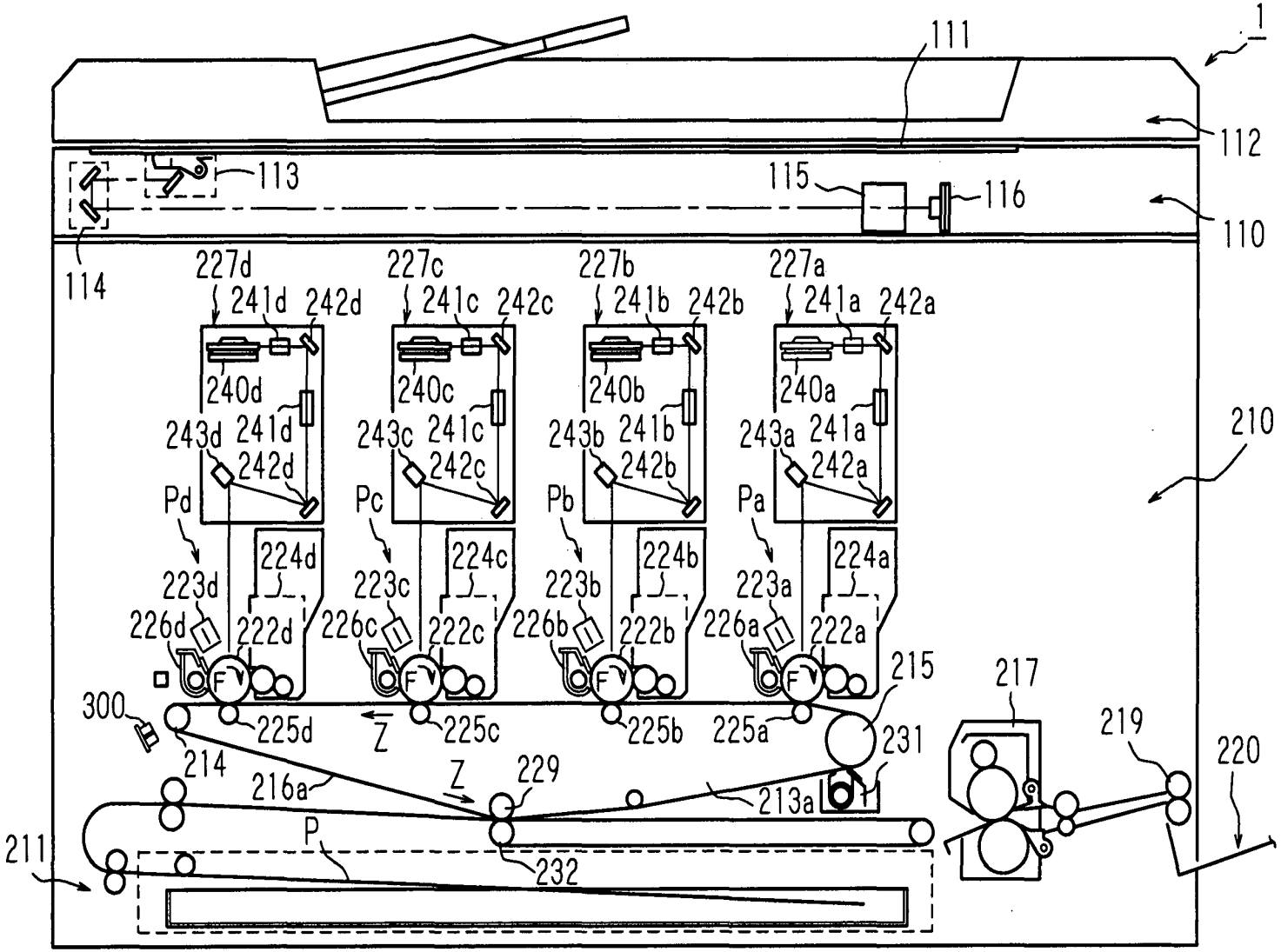

DIFFUSE-
REFLECTION LIGHT
COLOR
TONER
4.5
OUTPUT FROM
SENSOR (Vx)
V3
V2
V1
0
ID1
ID2
ID3
2.0
PATCH IMAGE DENSITY

FIG. 9


1
111
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Pd
224d
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222d
227c
241c
242c
240c
243c
242c
Pc
224c
223c
226c
222c
227b
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Pb
224b
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226b
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227a
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243a
242a
Pa
224a
223a
226a
222a
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215
217
219
220
231
213a
229
216a
214
300
225d
225c
225b
225a
Z
211
P
232